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SUBJECT INDEX

This is an index of all the reading matter in the ARCHIVES, except the Medical News Department.

The letters used to explain in which departments the matter indexed appears are as follows: "ab," abstracts, "E," editorial and the asterisk (*) indicates an original article in the ARCHIVES.

This is a subject index and one should, therefore, look for the subject word, with the following exceptions: "Book Reviews" and "Deaths," are indexed under these titles at the end of the letters "B" and "D." The name of the author, in brackets, follows the subject entry. If there are more than two authors, only the name of the first author is given.

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AUTHOR INDEX

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ABSTRACTS

The following abstracted articles have been published in the January-December, 1959 issues of the journal.

JANUARY

The Practice of Physical Medicine and Rehabilitation. D. L. Rose. *(pp. 1-7; 1 table)*

● One aspect of physical medicine and rehabilitation, namely its "practice" is outlined. A basic background history of the American Congress of Physical Medicine and Rehabilitation is outlined which includes evolution of the term physiatrist. The specialty and relationship with paramedical groups are discussed in detail. The need for physiatrists, their recruitment and training is stressed. Self-evaluation of current programs in this specialty is considered important. The newly adopted Principles of Practice of the American Congress of Physical Medicine and Rehabilitation are introduced.

Requests for reprints and/or information should be directed to: Donald L. Rose, M.D., University of Kansas Medical Center, Kansas City 12, Kans.

Trochanteric Bursitis: Management. R. M. Krout and T. P. Anderson. *(pp. 8-14; 5 tables)*

● A previous report by one of us (T.P.A.) presented the criteria for the diagnosis of chronic trochanteric bursitis of the hip. It was shown that in more than 50 per cent of the cases the bursitis is associated with some other painful condition in the same lower extremity or the back. An analysis of the methods of management of 50 cases of chronic trochanteric bursitis is presented. The various forms of treatment for the bursitis per se are compared. Special reference is made to the management of that group of cases in which the bursitis is associated with some other condition. Emphasis is placed on the necessity for correction of the associated situation as an integral part of the treatment of the bursitis. Several illustrative case histories are included.

Requests for reprints and/or information should be directed to: Robert M. Krout, M.D., Hitchcock Clinic, Hanover, N. H.

Plantar Wart Treatment with Ultrasound. H. Kent. *(pp. 15-18; 1 figure)*

● The methods of treating plantar warts are almost legion, but with the advent of ultrasonic therapy, there is now a mode which may resolve the disadvantages of other methods. This is a preliminary report of nine patients with plantar warts whose duration ranged from one month to thirteen years and who received ultrasonic therapy with what may be described as spectacular results. All patients but for one were relieved of their discomfort with disappearance of lesions. No recurrences have occurred although insufficient time has elapsed for ascertaining a "cure."

Requests for reprints and/or information should be directed to: Herbert Kent, M.D., 6213 N.W. Grand Blvd., Oklahoma City 12, Okla.

An Appraisal of American Training in Physical Medicine and Rehabilitation for Foreign Medical Personnel: Retrospect and Aftermath. L. P. Cajoleas; D. J. Feldman, and H. A. Rusk. *(pp. 19-25)*

● This pilot study of a small group of international medical trainees who received specialized training under the auspices of one American center suggests the need for additional research into the nature, problems, and outcomes of cross-cultural training for foreign medical personnel. It may be concluded that international trainees generally benefited from their professional training in the United States.

Requests for reprints and/or information should be directed to: Howard A. Rusk, M.D., Institute of Physical Medicine and Rehabilitation, 400 East 34th St., New York 16, N. Y.

Case Report: Rehabilitation of Patient with Paralysis and Advanced Flexion Deformities of Lower Extremities. S. Olejniczak and W. W. Glas. *(pp. 26-28; 2 figures)*

● This is a case report of a patient who was bedfast from the disabilities of multiple sclerosis. He had experienced paralysis and flexion contractures of both lower extremities, loss of sensation below the 10th dorsal segment, sacral and gluteal decubiti, and loss of bladder and bowel control. There was marked apathy, depression, and associated malnutrition. After bilateral hip disarticulation, closure of the decubiti, cystostomy, intensive physical therapy and occupational therapy was instituted. These efforts resulted in a satisfactory rehabilitation of this patient. Follow-up visits show that the patient and the family are adjusted to the disability, and the patient continues to do well on the home program that was initiated at the hospital.

Requests for reprints and/or information should be directed to: Wayne W. Glas, M.D., Director of Surgery, Wayne County General Hospital, Eloise, Mich.

A Work Adjustment Center in Vocational Rehabilitation. J. L. Rudd and S. N. Feingold. *(pp. 29-34)*

● This study discusses a particular type of workshop or work adjustment center representative of many now being established in various parts of this country. Workshops, as part of the community counseling and placement agency, have demonstrated a new and steady growth in the vocational guidance field. It is in this area that some of the best results in vocational rehabilitation have been achieved within the last decade. This type of workshop is most useful when the pattern of the individual's work behavior cannot be assessed through other technics or when special aspects of vocational activities must be developed or observed. Executives concerned with employment of personnel have expressed wonderment at the productivity and creativity of the handicapped. This makes forceful the statement "employ the handicapped – it's good business."

Requests for reprints and/or information should be directed to: Jacob L. Rudd, M.D., 481 Beacon St., Boston 15, Mass.

FEBRUARY

Certain Experimental Observations on a Pulsed Diathermy Machine. A. Wildervanck; K. G. Wakim; J. F. Herrick, and F. H. Krusen. *(pp. 45-55; 8 figures)*

● The primary objective when studying pulsed alternating currents generated by the equipment known as the "diapulse machine" was the determination of temperatures which could be produced in ground horse meat and in the thigh of the living animal (the dog). The secondary objective was to study the phenomenon which has been called "pearl-chain formation" by those who have described this observation previously. Finally, in order to learn whether or not these effects were peculiar to the intermittent short-wave machine under study, a comparative study was made by use of the well-known medical diathermy equipment which generated alternating currents continuously and at the same frequency. Significant rises in temperature were produced during an exposure time of 20 minutes to the diapulse machine when the controls were set at the two highest outputs. When the controls were set at lower positions and when the exposure time was 20 minutes, no rise in temperature was observed by the method employed for measuring temperatures, namely, the thermistors, and under the experimental conditions described. Similar rises in temperature could be obtained with continuously generated alternating currents when the output was properly adjusted. The pearl-chain formation was demonstrated as easily with very low outputs of the standard diathermy equipment as with the diapulse machine. The heating pattern of the

diapulse machine was determined by two different methods, that is by the egg-white method in which the egg is coagulated by heat and by a method in which color changes occur with suitable rises of temperature.

Requests for reprints and/or information should be directed to: Section of Publications, Mayo Clinic, 200 First St., S.W., Rochester, Minn.

Cortical Sensory Defects Causing Disability. F. M. Forster and C. D. Shields. *(pp. 56-61; 3 figures)*

● Consideration of sensory defects as a major factor in producing disability and handicap is important. The need for careful sensory evaluation and specific therapy aimed at the retraining of the patient in the sensory aspects is emphasized.

Requests for reprints and/or information should be directed to: Charles D. Shields, M.D., Professor & Chairman, Department of Physical Medicine and Rehabilitation, Georgetown University Medical Center, Washington 7, D. C.
and/or
Francis M. Forster, M.D., Professor & Chairman, Department of Neurology, University of Wisconsin School of Medicine, Madison, Wis.

Etiology and Pathology of Ischemic Ulcers. M. Kosiak. *(pp. 62-69; 3 figures)*

● Ischemic ulcers in dogs were produced by both high pressures applied for short durations or low pressures applied for long durations. The time-pressure relationship is inverse and follows a parabolic curve. Microscopic pathologic changes were noted in tissue subjected to as little as 60 mm. Hg for only 1 hour. Skin and subcutaneous tissue normally exert a sling or suspension effect, with the result that only a fraction of the applied pressure is transmitted to the deep tissue. Because living tissue is so sensitive to the ischemia produced even by very low external pressures, temporary relief of this pressure every few minutes is essential.

Requests for reprints and/or information should be directed to: Michael Kosiak, M.D., Department of Physical Medicine and Rehabilitation, 860 University of Minnesota Medical Center, Minneapolis 14, Minn.

Acute Cerebrovascular Accidents: Statistical Considerations, Diagnostic Methods and Treatment. J. Riishede and E. S. Staffeldt. *(pp. 70-72)*

● Cerebrovascular disease is of growing concern to the general practitioner as well as to the staff members of the hospitals. Apoplexy is the third most frequent cause of death in the USA as in Denmark, outranked only by heart disease and cancer. Medical statistics show that in Denmark, a steep increase in deaths from cerebrovascular accidents has occurred since 1943, and that the increase affects all age groups over 45 years. Cerebrovascular accident is a neurological syndrome, not a disease per se, and the underlying causes can not be ascertained adequately by usual clinical methods. Since 1951 carotid angiography has been introduced into the routine examinations of more than 200 patients with acute cerebrovascular accidents admitted to the Department of Neurosurgery, University Hospital in Aarhus, Denmark. Details of technic and complications encountered will be described. Neurosurgical procedures (evacuation of intracerebral hematomas) are briefly mentioned. Treatment prescribed and administered by the Department of Neurosurgery is outlined.

Requests for reprints and/or information should be directed to: E. Schack Staffeldt, M.D., Barthsgade 7, Aarhus, Denmark, Europe.

A Study of the Effectiveness of a Nylon Nonrubberized Elastic Stocking. E. C. Klein and L. J. Bronstein. *(pp. 73-78; 2 tables)*

● A large number of patients requiring elastic support for the lower extremities will not wear such support unless it is esthetically suitable and reasonably economical. A group of patients in this study found the stock to fulfill these requirements. The nylon elastics provided support in conditions of moderate abnormal venous states of the lower extremities causing edema; relieved symptoms associated with varicose veins, the postphlebitic phenomenon, chronic venous insufficiency, and in the absence of demonstrable pathology gave symptomatic relief to patients with "tired feet."

Requests for reprints and/or information should be directed to: Eugene C. Klein, M.D., 1089 Madison Ave., New York 28, N. Y.

MARCH

Registry Examination Data Feed-Back in Physical Therapy Education. C. d'A. Gerken. *(pp. 91-98; 2 tables and 1 chart)*

● Subject matter and total Registry examination scores of physical therapists recently graduated from 35 approved schools were compared, school by school. Data indicate graduates from each school have relative strengths and weaknesses; that graduates of no school are below the mean of the total group in all areas; that considerable variability exists among the scores earned by the 1,204 graduates in the subject matter fields; and that relative rankings of schools, determined by the scores achieved by their graduates, show consistency over time. It is suggested that results of the investigation provide unique types of data which may be used to evaluate some outcomes of physical therapy education in the United States.

Requests for reprints and/or information should be directed to: American Registry of Physical Therapists, 30 N. Michigan Ave., Chicago 2, Ill.

Electromyographic Composition of Poliomyelitis-Injured Muscle. E. F. Adams and G. C. Knowlton. *(pp. 99-104; 2 tables)*

● This paper reports the results of an electromyographic survey of 120 poliomyelitis injured muscles. The subject muscles were evenly distributed through the Lovett grades from zero to G or better. The incidence of fibrillation, voluntary polyphasic units, normal contour motor units and silence has been tabulated on the basis of a sixty point examination of each muscle. The incidence pattern of these electromyographic features in relation to muscle grade is described and the significance of these findings to diagnosis, prognosis and treatment is discussed.

Requests for reprints and/or information should be directed to: Ernest F. Adams, M.D., 619 N. Glen Oak Ave., Peoria, Ill.

Use of Hydrocollator Packs in the Treatment of Neck and Shoulder Pains. Y. M. Cordray and E. M. Krusen, Jr. *(pp. 105-108; 3 figures and 1 table)*

● This report is based on a study of more than 100 patients with symptoms of pain in the neck and shoulder and headache, classified as "cervical syndrome." The purpose of this study was to evaluate the use of Hydrocollator packs as opposed to short wave diathermy for therapeutic results. All patients selected were treated by the Hydrocollator pack as the only form of heat. This was usually followed by deep sedative massage and an active neck exercise program. There were several patients in this group who were treated with Hydrocollator packs because short wave diathermy was contraindicated. Patients were divided according to sex and classified on the basis of etiology. Results of treatment were determined for each group. The results obtained by the use of the Hydrocollator in relieving symptoms compared favorably with those previously obtained for a similar group of patients treated by short wave diathermy.

Requests for reprints and/or information should be directed to: Edward M. Krusen, Jr., M.D., Baylor University Hospital, 3500 Gaston Ave., Dallas 10, Texas.

Status of the Prevocational Unit. E. B. Nadler and M. Peszczynski. *(pp. 109-112)*

● Review of the literature on the prevocational unit reveals considerable debate regarding its functions and the personnel qualified to administer it. Amid the confusion, however, proponents of the various points of view agree that it consists mainly of actual work tasks selected from jobs which the disabled patient conceivably might enter. These tasks are usually, but not always, administered to the patient by occupational therapists. In its actual operation, the prevocational

unit has had two major functions — therapy, to improve work tolerance and readiness, and evaluation, to assess work skills, attitudes and performance. We suggest that much of the current debate in the literature would be resolved if the prevocational unit, in its therapeutic and evaluative aspects, were subjected to systematic, controlled study. Current research in psychological, vocational, and dexterity testing holds promise of isolating most of the factors which presently operate in prevocational performance. As evaluation, the prevocational unit would no longer be required. From the therapeutic viewpoint, prevocational prescriptions could be written that would proceed from tested therapeutic methods. Thus, prevocational therapy would return to its proper place, the occupational therapy center.

Requests for reprints and/or information should be directed to: Eugene B. Nadler, Ph.D., The Highland Shop, Highland View Hospital, Ireland Drive, Cleveland 22, Ohio.

A Vocational Work Adjustment Unit: Eight Months' Experience. E. B. Shires. *(pp. 113-117; 1 figure and 2 tables)*

● The work adjustment program which is operative at the Rehabilitation Institute of Kansas City, Mo., is described. The patients referred to this program are the hard core which the Division of Vocational Rehabilitation and other organizations engaged in the placement or training of disabled individuals have been unable to place by the usual methods. It was found, following an 11-week work adjustment program, that it was possible to place 26.6 per cent of these patients in competitive industry or training. At the present time, all individuals who are included in this percentage are in a firm placement. Although this is a small group of patients and a relatively short followup, it is believed that this study suggests an approach in the vocational rehabilitation of the severely disabled individual.

Requests for reprints and/or information should be directed to: Edward B. Shires, M.D., University of Kansas Medical Center, Kansas City, Kans.

New Apparatus: A Therapeutic Wheelchair for Above-Knee Amputees. S. G. Feuer. *(pp. 118-119; 3 figures)*

● A wheelchair is described which can be adapted in selected cases for prophylactic or therapeutic management of above-knee stumps where the patient remains confined to bed or wheelchair.

Requests for reprints and/or information should be directed to: Samuel G. Feuer, M.D., 132 Lafayette Ave., Brooklyn 38, N. Y.

APRIL

Relief of Arthritic Pain and Rehabilitation of Chronic Arthritic Patient By Extended Sympathetic Denervation. R. Herfort and S. H. Nickerson. *(pp. 133-140)*

● Pain arising in the weight-bearing joints is the major source of disability presented by most patients with chronic arthritis. The difficulty in alleviating joint pain, permanently and consistently, is the principal obstacle to the rehabilitation of these patients. During the past 3½ years, the authors have employed a surgical technic of so-called extended lumbar sympathectomy in a group of some 15 unselected patients with advanced rheumatoid arthritis and osteoarthritis of the hip and/or knee joint. The operative procedure consists of an ipsilateral retroperitoneal lumbar sympathetic denervation encompassing the lumbar sympathetic trunk distal to the crus of the diaphragm, accessory sympathetic ganglia, and decussating fibers in the prevertebral lumbar plexus. The surgery, in this group of middle-aged and elderly patients, has had no morbidity and no mortality. In the immediate postoperative period, these patients exhibited remarkably effective, consistent, and lasting relief of joint pain with concomitant improvement in joint mobility and in general functional capacity. These patients have been followed for periods up to four years postoperatively and, in all instances, the relief of joint pain and improved mobility have persisted. There have been no untoward effects noted in the follow-up period to date. Charcot arthropathy has not occurred nor is it anticipated.

Requests for reprints and/or information should be directed to: Robert Herfort, M.D., 5 Old Mamaroneck Rd., White Plains, N. Y.

Management of the Bladder in Traumatic Paraplegia. P. A. Morales and R. S. Hotchkiss. *(pp. 141-149; 3 figures)*

● One of the consequences of injury to the spinal cord is disturbance of bladder function. The neurogenic bladder in traumatic paraplegia generally expels its contents involuntarily and incompletely. As a result of urinary incontinence, the paralyzed patient becomes uncomfortable, foul-smelling, and socially isolated. Urostasis in the bladder leads to urinary infection, which, if not controlled or eradicated, readily spreads to the upper urinary tract and causes irreparable renal damage. Back pressure from the retained urine may eventually cause dilation of the ureter as well as the pelvis and calyces, and consequently further renal destruction. Stagnation of urine, in combination with other factors related to immobilization, promotes the formation of stones, which not only aggravates infection but also destroys kidney function by obstruction. Thus, the paraplegic individual, although no longer doomed to an early death, faces a long-term prognosis that remains speculative.

Requests for reprints and/or information should be directed to: Pablo A. Morales, M.D., New York University-Bellevue Medical Center, 420 East 34th St., New York 1, N. Y.

A Study of Contractures in Muscular Dystrophy. K. C. Archibald and P. J. Vignos, Jr. *(pp. 150-157; 2 figures and 4 tables)*

● The status of 43 muscular dystrophy patients actively being followed over a three-year period in the Muscular Dystrophy Clinic at University Hospitals of Cleveland has been reviewed. The study reveals certain significant correlations in the functional status and muscle strength with the degree and progression of joint contractures. This study particularly emphasizes the disabling effect of the different types of contractures, particularly in the lower extremities and compares the results of a well-outlined conscientiously applied stretching program with the natural progression of joint contractures in muscular dystrophy. Environmental factors are directly related to the success of a home exercise program. Success in application of lower extremity bracing for advanced dystrophy is dependent on correct timing and shows an important correlation with the extent of contractures. Iliotibial band contracture appears to play an important role in joint contractures and deformity in muscular dystrophy, although little attention has been focused on its role in this disease. The occasional judicious use of surgery in the control of joint contracture and iliotibial band tightness offers promise of an accessory measure in controlling joint deformities.

Requests for reprints and/or information should be directed to: Paul J. Vignos, Jr., M.D., Western Reserve University, 2220 Cummington Rd., Cleveland 6, Ohio.

Effects of Ultrasound on Growing Bone. J. L. Vaughen and L. F. Bender. *(pp. 158-160; 3 figures)*

● The epiphyseal area of growing bone is currently considered a contraindicated site for ultrasonic therapy. Previous studies show that damage occurs to bone cortex and bone marrow with high intensities of ultrasound. The effect of clinical doses of ultrasound upon the epiphyses of growing rabbits was studied. The left knee area of 20 animals was treated underwater with 1 w/cm² from a 12 cm² sound head for five minutes daily from the age of three months until there was x-ray evidence of epiphyseal closure (6-8 months). The untreated legs served as controls. Comparison of the data showed no significant difference in bone length, microscopic appearance or rate or manner of epiphyseal closure between the treated and control leg.

Requests for reprints and/or information should be directed to: Leonard F. Bender, M.D., Physical Medicine Department, University Medical Center, Ann Arbor, Mich.

Role of the Work Classification Unit of the Los Angeles County Heart Association. S. S. Sobin; W. G. Frasher; C. A. Alexander, and L. Horovitz. *(pp. 161-165)*

● The Los Angeles County Heart Association work classification unit has been in operation for almost four years. In that period it has successfully shown to employers, personal and industrial physicians, and others that many patients with cardiovascular disease are capable of working. Two important conclusions have resulted from this experience. One is that a demonstration of workability is not the same as a demonstration that heart patients can be rehabilitated. Actually, the demonstration of workability becomes the justification for rehabilitation services. The second is that demonstration does not mean simply "showing" that many heart patients can work. It must also mean changing community attitudes and patterns of service. This necessitates such activities as publicity, training, observation, and extension of services. This concept also has implications for the length of time required for a successful demonstration.

Requests for reprints and/or information should be directed to: Mr. Leon Horovitz, c/o Los Angeles County Heart Association, 660 S. Western Ave., Los Angeles 5, Calif.

MAY

An Analysis of the Rehabilitation Needs and Prognoses of 232 Cases of Cerebral Vascular Accident. M. Lowenthal; J. S. Tobis, and I. R. Howard. *(pp. 183-186; 7 tables)*

● Two hundred and thirty-two cases of cerebrovascular accident were admitted during a period of one year to a 1,000 bed municipal hospital. These cases represented four per cent of all medical admissions. They were evaluated and followed by the rehabilitation service. Descriptive material for the group includes analysis of such factors as age, sex, side of hemiplegia, mortality, previous episodes, etc. Physical and laboratory findings such as coma, incontinence, aphasia, blood pressure, muscle tone and cerebrospinal fluid were also recorded. The analysis of rehabilitation prognosis in the patients who survived the incident indicates that the presence of a rehabilitation service in a general hospital may favorably influence functional recovery in the hemiplegic patient.

Requests for reprints and/or information should be directed to: Milton Lowenthal, M.D., 1 East 105th St., New York 29, N. Y.

Temperature Rise of Various Tissues in the Dog on Exposure to Ultrasound at Different Frequencies. J. W. Gersten. *(pp. 187-192; 3 figures)*

● Various areas of the anesthetized dog were sounded at frequencies of 490 kc./sec., 1 mc./sec., and 3 mc./sec., and temperatures were recorded in different tissues. In all situations tested, the effective depth of penetration at 3 mc./sec. was not great, as measured by temperature rise. With relatively superficial bone, the temperature rise at the bone surface was greater than that of overlying muscle when sounding was done at frequencies of 490 kc./sec. and 1 mc./sec. At the two lower frequencies studied, temperature rise within the spinal canal was approximately the same as temperature rise of subcutaneous tissue. "Selective" heating of nerve was especially evident at 490 kc./sec.

Requests for reprints and/or information should be directed to: Jerome W. Gersten, M.D., Department of Physical Medicine and Rehabilitation, University of Colorado Medical Center, 4200 E. Ninth Ave., Denver 20, Colo.

Iontophoresis Studies with a Radioactive Tracer. H. T. Zankel; R. H. Cress, and H. Kamin. *(pp. 193-196; 1 figure and 1 table)*

● This is a report on a program of research to determine the amount of radioactive substance absorbed during iontophoresis. This work deals with ion transfer studies using radioactive iodine, with and without the application of heat and other modalities. Measurements are reported for skin absorption, and skin transmission as evidenced by tracer studies in 24 hour urine samples.

Requests for reprints and/or information should be directed to: Harry T. Zankel, M.D., Chief, Physical Medicine and Rehabilitation Service, Veterans Administration Hospital, Fulton St. and Erwin Rd., Durham, N. C.

Role of Personality Traits in Rehabilitation Problems. M. D. Zane. *(pp. 197-202; 1 figure)*

● In psychiatry, the development of personality traits as defenses against anxiety is widely accepted. In rehabilitation, personality traits often interfere with motor learning and create serious problems. This paper cites cases to show how personality traits interfere with motor learning; suggests a mechanism to explain the interference, and indicates management of the problem. Concrete methods for increasing the patient's reception of information during the task performance and reducing the interfering sensory-motor effects of the personality traits are discussed. Personality traits become a rehabilitation problem when they produce cortical effects which interfere with the progressive cortical reorganization that characterizes motor learning.

Requests for reprints and/or information should be directed to: Manuel D. Zane, M.D., 15 East 36th St., New York 16, N. Y.

Oral Intermittent Positive Pressure Breathing (OIPPB) in Poliomyelitis. W. D. Loeser and M. F. Kerr. *(pp. 203-209; 2 figures)*

● A new manner of artificial ventilation is described in which filtered air is intermittently pumped to the patient's mouth using a hose and pipestem mouthpiece. This has several advantages over conventional methods of mechanical artificial ventilation for the convalescent poliomyelitis patient e.g., self-regulation of tidal volume, partial self-regulation of rate, improved accessibility for nursing care, freedom from shell and tank encumbrances, less hindrance to standing and walking, and preservation of rib cage mobility through maintenance of normal respiratory excursions. Thus, OIPPB has proved useful for both artificial ventilation and physical therapy. As with other positive pressure methods, OIPPB may affect the peripheral circulation by elevating intrapleural, right atrial and systemic venous pressure. The over-all advantages of OIPPB have been demonstrated in 34 poliomyelitis patients requiring respiratory assistance; two case reports are given.

Requests for reprints and/or information should be directed to: William D. Loeser, M.D., The Youngstown Hospital Association, South Side Unit, Youngstown 1, Ohio.

Recognizing Anxiety in Counseling. T. A. Routh. *(pp. 210-213)*

● Severe emotional deficiencies may overwhelm even the most healthy personality. Some personality structures are totally incapable of handling average stresses, conflicts, tensions and frustrations. Yet, man is quite capable of dealing with considerable stress and anxiety before being emotionally overcome. It is important for a counselor to remember that if he understands the causes for anxiety, it will greatly increase his rapport with those with whom he works. A counselor should also realize however, that the mere discontinuance of a client's behavior or surface symptoms, is not indication of solution to the basic insecurity causing such symptoms.

Requests for reprints and/or information should be directed to: Mr. Thomas A. Routh, Florida Council for the Blind, 923 20th Ave., Tampa 5, Fla.

JUNE

Postoperative Management and Rehabilitation of the Hemipelvectomized Patient. T. F. Childs and M. Holtzman. *(pp. 227-230; 10 figures)*

● Initial and maintained fit of the prosthesis is a most difficult problem for a hemipelvectomized person. However, these individuals can be fitted successfully. Instead of walking stiff-legged as is usual, it is possible to develop good gait patterns flexing the knee of the prosthesis. These patients should be discouraged from becoming too adept in the use of crutches. This will cause a poor gait pattern, keeping the center of gravity over one remaining extremity even after the prosthesis is used.

Requests for reprints and/or information should be directed to: Milton Holtzman, M.D., 450 De Mott Ave., Rockville Centre, N. Y.

Some Considerations of an Optimal Residency Program in Physical Medicine and Rehabilitation. E. W. Johnson; R. E. Worden, and R. D. Burk. *(pp. 231-237; 1 figure)*

● In order that this specialty continue to grow it is imperative that the training programs for physicians specializing in physical medicine and rehabilitation be well organized and standardized, as well as comprehensive, covering training and experience in every aspect of the field. The essentials of this residency program and the advantages and disadvantages of such a program in a university setting are discussed. The present physical medicine and rehabilitation program at Ohio State University Health Center is described.

Requests for reprints and/or information should be directed to: Ernest W. Johnson, M.D., 2470 Cranford Rd., Columbus 21, Ohio.

Vocational Evaluation by Work Sample Technic and Its Dependence upon Medical Contributions. W. C. Gorthy; R. C. Darling; L. T. Pai, and J. O'Brien. *(pp. 238-242; 3 figures)*

● After twenty years' experience, the Institute for the Crippled and Disabled has perfected a method of vocational evaluation which uses the job sample as the primary technic. Called the TOWER System which is the short title for "Testing, Orientation and Work Evaluation in Rehabilitation," it has been published for general use in rehabilitation agencies. Incorporating the TOWER System into a comprehensive rehabilitative process requires the active participation of the medical staff to assess the patient's physical limitations in terms of specific job areas; prescribe treatment leading to improved vocational performance; prescribe the limits of and regulate work tolerance; prescribe adaptive devices that will improve vocational potential, and, review specific vocational recommendations to consider their compatibility with the long-term health needs of the patient. This paper explains the fundamentals of the TOWER System and points up the necessity for active participation by the medical staff in its use. It also cites the results of the past five years with successful cases evaluated by this process and gives case illustrations to demonstrate the manner in which a well-organized system of evaluation can produce better results in terms of more realistic vocational goals.

Requests for reprints and/or information should be directed to: Mr. Willis C. Gorthy, Institute for the Crippled and Disabled, 400 First Ave., New York, N. Y.

Neurotripsy: A Surgical Method for Instigating Reinnervation of Diaphragmatic Paretic Muscle Fibers in Respiratory Embarrassment Following Poliomyelitis. H. E. Billig, Jr. *(pp. 243-246; 8 figures)*

● In poliomyelitis, residual respiratory embarrassment may be the result of loss of a sufficient share of the motor nerve axons of the phrenic nerves reducing the innervated diaphragmatic muscle fibers to below the point of providing sufficient power to aerate the lung properly. The denervated muscle fibers (about 125 per motor nerve axon) do not necessarily degenerate, but atrophy, and are capable of restoration to function if reinnervated by increased arborization of the residual intact motor nerve axons. A means for instigating increased arborization of the remaining intact motor nerve axons is presented, together with two illustrative case histories in which this has successfully been accomplished.

Requests for reprints and/or information should be directed to: Harvey E. Billig, Jr., M.D., The Billig Clinic, 139 S. Alvarado St., Los Angeles, Calif.

Threshold Muscular Fatigue Level and Strength Decrement Recovery of Elbow Flexor Muscles Resulting from Varying Degrees of Muscular Work. P. J. Pastor. *(pp. 247-252; 3 figures and 2 tables)*

● The purposes of this study were to determine the threshold muscular fatigue level from elbow flexion ergographic exercise under optimum work output conditions and the rate of strength recovery following various amounts of fatiguing exercise of the elbow flexor muscles. Fou teen situations were studied, ranging from strength testing only through exhaustive ergographic exercise. The strength decrements 30 seconds after exercise were not statistically significant until the ergographic situation of nine repetitions was reached, so this amount of exercise was considered the threshold level. Greater consistency in recovery curves resulted as the number of repetitions increased. The number of contractions by the subjects in exhaustion testing was appreciably less than for those who were assigned 35 and 40 repetitions. One explanation could be the difference in motivation between an assigned number of repetitions to complete and a voluntary exhaustive exercise situation.

Requests for reprints and/or information should be directed to: Paul J. Pastor, Ed.D., Fresno Junior College, Fresno, Calif.

JULY

The International Federation of Physical Medicine. F. H. Krusen. *(pp. 275-284; 4 figures)*

● The details of the first and second international congresses of physical medicine are recalled with an outline of the plans for the third congress under the auspices of the American Congress and American Academy of Physical Medicine and Rehabilitation. Since international accord and mutual understanding have characterized the previous congresses of the Federation, it is hoped that new heights of international felicity shall be achieved through continuing efforts to promote the health of all mankind by providing physical treatment and rehabilitation of handicapped persons throughout the world.

Requests for reprints and/or information should be directed to: Section of Publications, Mayo Clinic, 201 First St., S.W., Rochester, Minn.

Athetosis: Neuromuscular Dsyfunction and Treatment. H. Kabat and M. McLeod. *(pp. 285-292)*

● Paresis of voluntary movement is a constant finding in athetosis. Isotonic contraction is weaker than isometric contraction, and muscle power is less in the lengthened position. Imbalance of antagonistic muscles is also present. The goal of treatment is correction of paresis with improvement in voluntary motion and performance, which is accompanied by decrease in athetoid irradiation. Modified technics of proprioceptive facilitation are applied for this purpose, with emphasis on isotonic function and imbalance of antagonists. The athetoid irradiation resulting from the resistive exercise can safely be ignored. Training in normal patterns of movement is included in the facilitation program. Habit training in posture, gait, and essential skills is also carried out.

Requests for reprints and/or information should be directed to: Herman Kabat, M.D., Miriam Hospital, 164 Summit Ave., Providence, R. I.

Conference of Rehabilitation Centers: A Report. N. K. Covalt. *(pp. 293-299)*

● The growth of interest in rehabilitation has been remarkable. It is not surprising that the increase in centers has outstripped the supply of interested physicians and even the interest on the part of the medical profession. The latter, by training and practice, has not as yet had the vision of the teamwork needed in rehabilitation of the chronically ill or disabled patient.

Requests for reprints and/or information should be directed to: Nila Kirkpatrick Covalt, M.D., 280 Edinburg Dr., Box 1494, Winter Park, Fla.

AUGUST

A Radiographic Method of Evaluating Hip Flexion Contractures. L. M. Rothman;

O. Deutschberger; M. Lowenthal, and J. M. Breuer. *(pp. 325-329; 4 figures and 1 table)*

● Flexion contracture at the hip joint is found as a complication in a wide variety o physical conditions encountered on a rehabilitation service. This complication is not an infrequent factor limiting the ambulation goals of the rehabilitation patient. The usual methods of estimating the presence and degree of hip flexion contracture by the eye alone or even with a goniometer are subject to considerable error. A technic of mensuration utilizing a lateral x-ray projection has yielded reproducible measurements with a high degree of accuracy. Fixed bony landmarks give origin to lines which when extended form an angle. The measurement of this angle gives an absolute figure which represents the relationship between the bony pelvis and the femur, and permits objective evaluation of the therapeutic effectiveness in dealing with limitation of hip extension.

Requests for reprints and/or information should be directed to: Leon Rothman, M.D., 2453 Ocean Ave., Brooklyn 29, N. Y.

Further Studies of Brief Isometric Exercises. W. T. Liberson and M. M. Asa. *(pp. 330-336; 5 figures and 2 tables)*

● Effectiveness of daily brief (6 second) isometric exercises as compared with the DeLorme exercises was investigated in 26 normal individuals (hypothenar eminence was exercised). It was found that these exercises produce increase in strength and endurance more rapidly than the DeLorme type of exercise. Additional increase in strength and particularly endurance was found, however, when 6 second brief iso. etric exercises were repeated several times a day. No contralateral effects are observed. The results were confirmed by a direct recording of the muscle contractions produced by electrical stimuli prior to and after training. Repeated brief isometric exercises were applied to patients with lower motor neuron lesions with satisfactory results. The significance of these findings is discussed.

Requests for reprints and/or information should be directed to: W. T. Liberson, M.D., Chief, Physical Medicine and Rehabilitation Service, Veterans Administration Hospital, Hines, Ill.

Sequence of Action of the Diaphragm and Intercostal Muscles During Respiration. II: Expiration. A. J. Murphy; G. H. Koepke; E. M. Smith, and D. G. Dickinson. *(pp. 337-342; 1 figure and 4 tables)*

● The pattern of activity of the diaphragm and intercostal muscles during passive and forced expiration of measured volumes of air was studied by means of the multiple-channel electromyograph using the needle electrode technic. The point of onset or cessation of the muscle action potentials was determined with reference to the onset of expiratory air flow. When a forced expiration is initiated from a deep inspiration, intercostal activity occurs consistently and is recruited sequentially from the eleventh intercostal upward, while activity in the diaphragm stops at the onset of expiration. However, the smaller the volume of air in the lungs at the beginning for a forced expiration the more likely that the intercostals will become active simultaneously with the onset of the expiration. During passive expiration, intercostal and diaphragmatic inspiratory activity tapers off into expiration, suggesting a braking action by these muscles to oppose the elastic forces of the lung.

Requests for reprints and/or information should be directed to: Alma J. Murphy Ph.D., Department of Physical Medicine and Rehabilitation, University Hospital, 1313 E. Ann St., Ann Arbor, Mich.

A Reaction of Degeneration Scanner. A. J. Heather and M. A. Apostolico, Jr. *(pp. 343-346; 5 figures)*

● A simplified, portable, compact reaction of degeneration scanner is described, and the electrical characteristics of the instrument discussed in detail. This apparatus provides a quick bedside method for the detection of peripheral nerve lesions. The development of the scanner points up the advantages of cooperation between electronics engineers and physicians working together to design as well as test new and improved equipment.

Requests for reprints and/or information should be directed to: Arthur J. Heather, M.D., Medical Director, Eugene Dupont Hospital and Rehabilitation Center, 3506 Kennett Pike, Wilmington 6, Del.

SEPTEMBER

Radiologic Aspects of Moderately Severe Cervical Spine Trauma — *Panel Discussion on Head, Neck and Arm Symptoms Subsequent to Neck Injuries.* **M. S. Abel.** *(pp. 371-378; 6 figures)*

● The small elements of the cervical vertebrae are easily and frequently fractured by whiplash and other traumata. The symptomatology is quite variable both immediately after the injury and some years later. Painstaking x-ray examination of the cervical spine, including additional specialized views, frequently demonstrate these l sions not usually seen on routine views. Lateral mass lesions have characteristic deformities, which may serve as foci of hypertrophic change involving the apophyseal joints and joints of Luschka.

Requests for reprints and/or information should be directed to: Martin S. Abel, M.D., 655 Sutter St., San Francisco 2, Calif.

Range of Mobility of the Cervical Spine — *Panel Discussion on Head, Neck and Arm Symptoms Subsequent to Neck Injuries.* **F. J. Kottke and M. O. Mundale.** *(pp. 379-382; 2 figures and 2 tables)*

● Evaluation of motion in the neck is difficult because of the short broad vertebrae buried beneath soft tissue which is thick in relation to the lengths of the moving segments. Such evaluation is further complicated because the relatively spherical head does not provide good reference points of evaluation of motion. Because of greater mobility at the upper and lower ends of the neck than in the midcervical region, unit concept of cervical motion is made even more inaccurate. Motion between adjacent vertebrae should and must be studied by x-ray. Cinefluorography promises considerable assistance in evaluation of relative positions and motions of adjacent vertebrae. Considering current technics and understanding of kinesiology of cervical motion, single figures of ranges of motion in the three primary perpendicular planes as indices of joint motion should no longer be accepted. Studies should attempt to indicate the specific joints involved when there is limitation of motion.

Requests for reprints and/or information should be directed to: Frederic J. Kottke, M.D., Department of Physical Medicine and Rehabilitation, University of Minnesota Medical Center, Minneapolis, Minn.

The Structural Injuries — *Panel Discussion on Head, Neck and Arm Symptoms Subsequent to Neck Injuries.* **R. Jackson.** *(pp. 383-386)*

● It is often difficult to determine the extent of the injury to the cervical spine and it is just as difficult to estimate the amount of residual disability. One can, however, prognosticate with certainty that there will be some permanent disability due to the inevitable degenerative changes which will occur to decrease the functional efficiency of the cervical spine. The functional demands made upon each injured cervical spine are of importance in the determination of the amount of permanent disability. In the ensuing years we will be able to follow more patients who have had neck injuries thereby enabling us to determine better the inevitable changes which occur. Clinical examinations and radiographic studies over a period of 10 to 20 years are necessary.

Requests for reprints and/or information should be directed to: Ruth Jackson, M.D., The Jackson Clinic, 3629 Fairmount, Dallas, Texas.

Head, Neck and Arm Symptoms Subsequent to Neck Injuries: Physical Therapeutic Considerations — *Panel Discussion*

on Head, Neck and Arm Symptoms Subsequent to Neck Injuries. **D. Rubin.** *(pp. 387-389; 3 figures)*

● The combinations of an intensive physical therapeutic program, medication, reassurance, and early return to activity has resulted in a gratifying and rapid relief of head, neck, and arm symptoms subsequent to "whiplash" neck injuries. The regimen which has been outlined emphasizes the importance of physical and mental mobilization rather than the too-frequently employed physical and mental immobilization symbolized by the cervical collar and hospitalization.

Requests for reprints and/or information should be directed to: David Rubin, M.D., University of Southern California Medical School, 6360 Wilshire Blvd., Los Angeles 48, Calif.

Study of Normal Range of Motion in the Neck Utilizing a Bubble Goniometer C. A. Buck; F. B. Dameron; M. J. Dow, and H. V. Skowlund. *(pp. 390-392; 2 tables)*

● There is definitely a clinical need for a standard of normal range of motion in the neck. Much more work must be done to establish such a standard for even a small age group, such as used in this study. To make such a normal range useful clinically, an accurate and reliable, yet relatively simple means of measurement is needed. The methods herein described may fill this need and should be further tested to determine their usefulness.

Requests for reprints and/or information should be directed to: Helen V. Skowlund, Department of Physical Medicine and Rehabilitation, University of Minnesota Medical Center, 860 Mayo Bldg., Minneapolis, Minn.

Special Orthopedic Diagnostic and Therapeutic Considerations — *Panel Discussion on Head, Neck and Arm Symptoms Subsequent to Neck Injuries.* **H. E. Billig, Jr.** *(pp. 393-395; 2 figures)*

● By means of a gliding motion on the facet joints, the neck can tilt forward, backward, sideward as well as rotate. The range of motion is limited by joint ligaments surrounding the entire circumference of the facet joints. If the head and neck is forced in any direction past the normal range of allowable motion, then destructive compression damage occurs to the structures of the neck on the side of the direction of the motion and distention damage occurs on the opposite side. Any facet joint dislocations or subluxations must be reduced and the facet joint ligaments allowed to heal. The neck must be gradually mobilized by routine repeated traction so as to free the nerves and blood vessels from the constricting fibrous irritation. Autonomic blocking agents such as chlorpromazine, hexamethonium, and probanthine serve useful purpose in the early stages of repair.

Requests for reprints and/or information should be directed to: Harvey E. Billig, Jr., M.D., The Billig Clinic, 139 S. Alvarado St., Los Angeles 57, Calif.

OCTOBER

Measurement of Energy Expenditure During Ambulation, with Special Reference to Evaluation of Assistive Devices. G. Bard and H. J. Ralston. *(pp. 415-420; 4 figures and 1 table)*

● A method is described for presenting the results of energy measurements in the ambulation of both normal and disabled subjects. It is shown that the energy curves calculated as calories per meter walked per kilogram of body weight are a most instructive form for presentation of energy data, and may be used for comparing one subject with another, or for comparing the performances of the same subject using a variety of types of assistive devices. Illustrative examples drawn from normal subjects, above-knee amputees, and hemiplegics are provided and discussed.

Requests for reprints and/or information should be directed to: Gregory Bard, M.D., Department of Physical Medicine and Rehabilitation, University of California Medical Center, San Francisco 22, Calif.

A Method for the Functional Evaluation of Disability. J. Sokolow; J. E. Silson; E. J. Taylor; E. T. Anderson, and H. A. Rusk. *(pp. 421-428; 2 tables)*

● The need for an objective method of evaluating disability has become more pressing with the advance of rehabilitation and the passage of legislation of the "disability freeze" type. With systems now in use, it is conceivable that a person might be considered disabled in one state and yet be rehabilitated and selectively placed in a job in another state. This project was undertaken to develop a uniform system of classifying the physical, emotional, social, and vocational capacities of disabled individuals functionally. A tentative classification system has thus been devised embracing the physical, social, emotional, and vocational spheres, and which permits broad application but also detailed expansion where desirable. Data from the forms are punched on I.B.M. cards. These forms have been pilot tested on 100 patients in various stages of rehabilitation at several institutions to determine inadequacies and necessary revisions.

Requests for reprints and/or information should be directed to: Jack Sokolow, M.D., 63-61 99th St., Forest Hills, N. Y.

Use of Lightweight Synthetic Materials to Fabricate Corrective Shoes. H. M. Yanof. *(p. 428)*

● A new concept in the design of orthopedic appliances is discussed. New plastics and other light materials should be substituted for the heavy ones now used in the manufacture of these appliances.

Requests for reprints and/or information should be directed to: Howard M. Yanof, Donner Laboratory, University of California, Berkeley 4, Calif.

Role of Intensive Physical and Occupational Therapy in the Treatment of Cerebral Palsy: Testing and Results. A. J. Ingram; E. Withers, and E. Speltz. *(pp. 429-438; 8 figures and 1 table)*

● Sixty cerebral-palsied children have been subjected to an intensive program of physical and occupational therapy. Progress made by these children has been studied by testing based on a developmental scale of motor and social performance. This developmental scale has been in use for seven years. This test may be improved but appears to be useful in measuring progress objectively, and informative in helping to solve the problem of which patients can be selected most profitably for admission to cerebral palsy installation.

Requests for reprints and/or information should be directed to: Alvin J. Ingram, M.D., Campbell Clinic, 869 Madison Ave., Memphis 5, Tenn.

NOVEMBER

Social Engineering for Rehabilitation. O. L. Freeman. *(pp. 461-466)*

● In this age of plenty, we can afford to apply the best we know — to rehabilitate lives; to educate our children to their fullest potential; to provide adequate housing, law and order, justice, and a healthy environment for the millions crowding into our cities and suburbs; to provide constructive jobs and full production; to provide for the common defense; and to provide economic assistance to peoples in foreign lands to bring them hope for higher standards under democracy and freedom. Our society can provide all these services if we but have the ability, the vision, and the courage to accept the challenge. The courage for the challenge will give rise to a new era in which men will conquer on the frontiers of human relations as they have overcome the physical hazards that beset the frontiers of human progress in ages past.

Rehabilitation of the Bladder in Injuries of the Spinal Cord. W. C. Stolov. *(pp. 467-474; 1 figure and 2 tables)*

● Results on 59 patients with spinal cord injuries treated in the University of Minnesota Rehabilitation Service in the last four years are reviewed. Sixty-four per cent of these are catheter-free. Of those admitted with catheters, 58 per cent were converted to a catheter-free status. Patients with autonomous bladders had a greater conversion rate than did those with reflex bladders. Seventy-four per cent of those with incom-

plete lesions converted compared to 59 per cent of those with complete lesions. The average length of time after injury for the patients to become catheter-free was seven and one-half months. Patients with upper motor neuron lesions converted in six months and those with incomplete lesions made the transition in three months. Ischemic ulcer was the major cause of failure to attain catheter-free status and vesical lithiasis was the most frequent urinary tract complication. The physiology of micturition with respect to the sacral spinal reflex center is reviewed, and technics of treatment are discussed. The treatment program that has evolved in the care of the cord bladder is presented.

Requests for reprints and/or information should be directed to: Walter C. Stolov, M.D., University of Minnesota Hospital, Minneapolis 14, Minn.

Use of Anticoagulants in Cerebral Thrombosis. P. A. Huene. *(pp. 475-479)*

● The clinician is advised to use these drugs cautiously — only in certain types of cerebral vascular accidents, only if certain precautions are taken and a most rigid control maintained. Some believe that anticoagulants are of no benefit whatsoever, as described in this study; others, while recognizing the possible benefit, do not believe that the potential gain in anticoagulant therapy is worth the risk of its inherent danger. Hemorrhage is the primary danger, not only in the brain but in all parts of the body. Infarcts due to emboli are usually hemorrhagic, and anticoagulants given at such times will aggravate the hemorrhagic condition.

Requests for reprints and/or information should be directed to: Phyllis A. Huene, M.D., Community Hospital, Glen Cove, N. Y.

Crutches for a Patient with Severe Upper Extremity Impairment. P. Harbine; N. Staael, and J. A. Evert. *(pp. 480-482; 2 figures)*

● Use of the crutches described in this study may enable an individual to start gait training at an early phase of rehabilitation. The crutches were designed for a four-point gait but have proved substantial enough for a swing-through gait. It is thought that this type of crutch may readily be adapted to other patients with severe disability of one or both upper extremities.

Requests for reprints and/or information should be directed to: Patrick Harbine, Northern Pacific Beneficial Association Hospital, Missoula, Mont.

Ultrasonic Effects as Demonstrated in Live Pigs with Surgical Metallic Implants. J. F. Lehmann; G. D. Brunner; A. J. Martinis, and J. A. McMillan. *(pp. 483-488; 6 figures and 1 table)*

● Maximal therapeutic dose of ultrasonic energy was applied over the areas of surgical metallic implants in live pigs comparable in weight to human beings. Temperature levels measured in the focal area of ultrasonic intensity resulting from reflection at the metal implant surface were within the range generally considered to be therapeutic. Histologic studies demonstrated that ultrasound applied in the presence of a surgical metallic implant did not produce any untoward effects; specifically, there was no evidence of burns, delayed bone and soft tissue healing, or nonthermal reactions, such as cavitation. These results, obtained in live animals with the blood flow intact, demonstrate that it is possible to apply ultrasonic energy safely in the presence of surgical metallic implants. The therapeutic efficacy of ultrasonic energy in the treatment of joint contractures associated with conditions frequently managed with the insertion of metallic implants remains to be evaluated.

Requests for reprints and/or information should be directed to: Justus F. Lehmann, M.D., University of Washington, Department of Physical Medicine and Rehabilitation, Seattle 5, Wash.

Electrocardiographic Changes in Poliomyelitis Patients. R. T. McReynolds and O. L. Huddleston. *(pp. 489-491; 1 figure and 1 table)*

● Electrocardiographic examinations were made on a series of 70 severely involved anterior poliomyelitis patients. All except four of the patients were adults and the examinations were made four to twelve months after the onset of poliomyelitis. None of the patients had a previous history of rheumatic fever or other cardiac disease prior to poliomyelitis. Six or seven per cent of the severely involved poliomyelitis patients showed persistent abnormalities of the electrocardiogram, which were regarded as permanent changes. The alterations of the electrocardiogram occurred in the S T segment and T wave abnormalities.

Requests for reprints and/or information should be directed to: Roy T. McReynolds, M.D., 710 Wilshire Blvd., Santa Monica, Calif.

DECEMBER

Physical Medicine and Rehabilitation — A Phase of Human Ecology. A. C. Jones. *(pp. 505-509)*

● The thought that physical medicine is ancillary, adjunctive or dispensable must be replaced by the conviction that physical procedures are essential elements in any plan for treatment of a patient, omission of which may amount to neglect. Physical medicine and rehabilitation should be a constant consideration of every general practitioner and specialist. This will result in better care for patients everywhere. Everyone who is identified with the specialty bears a great responsibility.

Requests for reprints and/or information should be directed to: Arthur C. Jones, M.D., 712 S.W. 12th Ave., Portland, Ore.

Comparative Study of the Efficiency of Short-Wave, Microwave and Ultrasonic Diathermy in Heating the Hip Joint. J. F. Lehmann; J. A. McMillan; G. D. Brunner, and J. B. Blumberg. *(pp. 510-512; 2 figures and 1 table)*

● It is demonstrated in this study that the temperature of the hip joint could be raised to any desired level by application of ultrasound. Since the rise of temperature measured in that part of the joint directly exposed to ultrasound was much greater than that recorded where the ultrasonic beam had first traversed the bone, it seems advisable to treat the joint from all aspects. Readily accessible for treatment in the human are the anterior, superior, and posterior aspects of the hip. Microwave and short-wave diathermy did not produce a temperature within the therapeutic range in the hip joint. It is assumed that the experimental findings obtained with these forms of energy can be explained by the differences in the depth of penetration, the most important determinant being the thickness of the subcutaneous fat and musculature covering the area being treated.

Requests for reprints and/or information should be directed to: Justus F. Lehmann, M.D., University of Washington, Department of Physical Medicine and Rehabilitation, Seattle 5, Wash.

Report of the Development of the R.I.C. Plastic Tenodysis Splint. C. Sabine; F. Sammons, and B. J. Michela. *(pp. 513-515; 3 figures and 1 table)*

● In attempts to meet the three basic criteria for an ideal tenodysis splint, use of polyester resin has been explored. It is felt the RIC splint meets the basic criteria more than does a metal splint. While clinical application to date has been limited, results have been sufficiently gratifying to merit more widespread consideration in hand disability problems.

Requests for reprints and/or information should be directed to: Bernard J. Michela, M.D., Director, Rehabilitation Institute of Chicago, 401 E. Ohio St., Chicago 11, Ill.

Age- and Sex-Related Muscle Weakness. T. S. Danowski and M. J. Wratney. *(pp. 516-520; 6 figures)*

● Measurements of the performance of muscles against resistance and gravity in healthy children have revealed a relative weakness in the extrapelvic and pelvic groups in boys and girls 7 to 15 years of age. Thereafter, males attain maximal muscle strength in all groups, whereas a significant proportion of females aged 15 to 30 years manifest a weakness of the hip flexors, hip rotators, hip extensors, and the gluteus medius. It is suggested but not established that these age and sex variations in muscle strength are related to androgen-estrogen secretion. The presence of such weaknesses in a normal or average population must be taken into account in tests of muscle performance.

Requests for reprints and/or information should be directed to: T. S. Danowski, M.D., Professor of Research Medicine, 930-936 Health Professions Bldg., University of Pittsburgh School of Medicine, Pittsburgh 13, Pa.

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